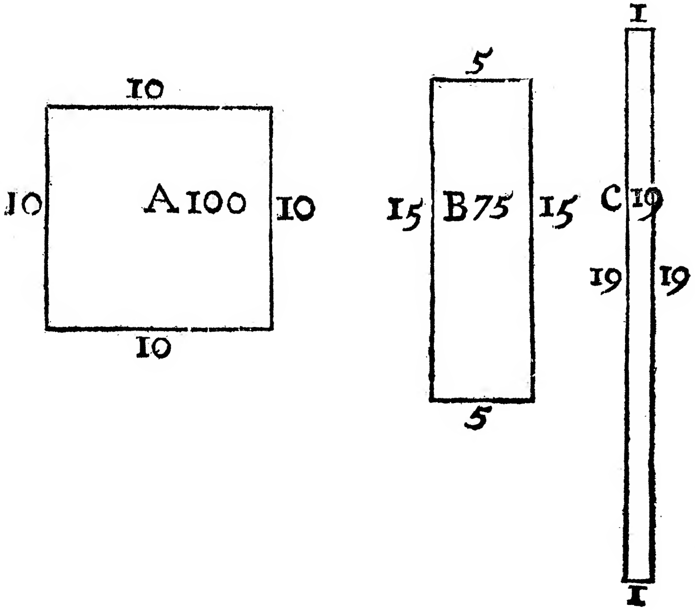
VI. *An Account of Books.* 1. *Jac. Gaveti Academ. Monſpel. Alumni Avenionenſis Doct. Medici & apud Camberienſes Practici Nova Febris Idæa ceu Conjecturæ Phyſicæ circa Febris Naturam. Genevæ* 1700. *in* 8o.

THere is no Diſeaſe more frequent than Fevers, and yet there is none whoſe nature is more dark and myſterious.

The Ancients declare all Fevers to be an unnatural heat firſt kindled in the Heart, and thence imparted by the Veins and Arteries to every part of the Body. Moſt of the celebrated Modern Writers ſpeak of nothing but a Fermentation or Efferveſcence of the Blood. But theſe accounts are inſufficient, ſince nothing more is aſſign'd than an Accident or General Cauſe, notwithſtanding the ſeveral ſpecies of this Diſeaſe do ſo much differ in their nature and appearances. The peculiar and inſeparable of Fevers is an unuſual quickneſs of Pulſe, as M. *Gavet* after *Sennertus*, *Sylvius*, *Etmuller* does believe. The true and Natural Cauſe of this will appear after ſome previous reflections on the Circular Motion of the Heart and Arteries, and the manners of Secretion and other Animal Operations.

Not to repeat what is commonly known, concerning the Muſcular ſtructure of the Heart, and the Artifice of its Fibres, Valves, Tendons, *&c.* M. *Gavet*, contrary to the opinion of former Writers, thinks the true *Diaſtole*, or Dilatation of the Heart happens at the time of its Decurtation, or when its *Apex* is drawn up to its Baſis, and its *Syſtole* or Contraction is during its Elongation. If two Paralellograms have equal Perimeters or Circumferences, as ſuppoſe 40 inches for inſtance, that whoſe ſides, or length and breadth are equal, contains the greateſt *Area*, and that whoſe length and breadth differ moſt,

moſt, the leaſt. This is plain, if we conſider the 3 Figures A, B, C.



Let the ſumm of the ſides be 40 inches or parts, and the length and breadth of the firſt, or A be in both 10 of B or the ſecond 15 and 5, of C 19 and 1. A ſhall contain an Area of 100 inches, B of 75, and C but of 19. And therefore our Author thinks it cannot be denied, the Heart contains the greateſt quantity of Blood when it is abbreviated, ſince it does not then approach nearer to a ſquare, but a Spherical Figure, which by the conſent of all Geometers is the moſt capacious.

As for the Percuſſion of the Breaſt, he thinks this is in the *Diaſtole.*

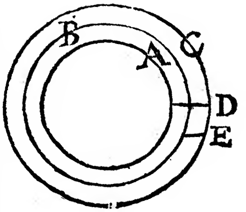
M. *Gavet* conſiders next the Fermentation, the Conſtituent Parts of the Blood, the Proceſs of Generation, the ſeveral Modes of Secretion. He thinks it moſt probable, that the Conſtituent parts of all the Animal Liquors, as Blood, Chyle, Choler, are formally exiſtent in the Aliment,

ment, ſince they are all prepared out of the Chyle into which the Food is reſolved by the Action of the Stomach. He judges this will not be denyed by thoſe who believe the five Chymical Principles to be Ingredients in the compoſition of all Natural Bodies, becauſe they are reſolved into them by the operation of the Fire. Another invincible Reaſon, in our Authors opinion, are the Particles of Bile blended and mixed with the maſs of Blood, and convey'd to all parts of the Body by the ſame Canals with that Crimſon Liquor, tho it does not appear to our ſences till the *Acini* or Glands of the Liver are obſtructed, for then being unable to paſs off, it regurgitates, and infects the Blood, and all the Animal Juices, and may be diſcerned by its Taſte and Colour. This is the caſe of the Urine, Sweat, *&c.* whoſe reſpective Colatories do not produce, but meerly percolate them from the Blood, of whoſe promiſcuous mixture its maſs is formed. Nor can the difference of Colours, as Red, Golden, Tranſparent, be an objection, ſince the leaſt Change or New Diſpoſition of its ſuperficial parts, is ſufficient to give a new modification of the ſight, and create a different effect.

Having thus laid down his Principles, M. *Gavet* in his ſecond part applies theſe to inveſtigate the nature of Fevers and the Accidents which attend them. There are ſome dangerous and fatal Diſeaſes, which for want of due conſideration are called Inward and Malignant Fevers. Here the maſs of Blood is at once corrupted, and its Conſtitution ruined, and yet there is no obſervable quickneſs of the Pulſe. For this reaſon, wanting the Character and Mark, our Author excludes them the Genus of Fevers, into whoſe Nature and Cauſes he proceeds to enquire.

When the Animal Liquors begin to ferment and ſwell, they cauſe a diſtenſion of the Veſſels in which they are contained ; and hence follows the neceſſity of a frequent Pulſe: for the Animal Spirits being unable to contract the Arteries, and ſtreighten their Channels, by reaſon of the

the reſiſtance of the contained fluid, there is leſs time required for their reſtitution by their Elaſtick force. For inſtance, if the Circle A be the Cavity of the Arterial Cylinder in its Natural *Syſtole*, and the Circle C the Cavity in its greateſt *Diaſtole*, and D the ſpace the Coats of the Artery paſs thro in their alternate motion. If again B be the Cavity of the Artery, when it is diſtended by the Intumeſcence of the Arterial Blood, and E be the Diſtance which the Coats of the Artery paſs thro, is it not plain they ſhall deſcribe the Line E twice in the ſame time they do the other once, and conſequently there be two Pulſations inſtead of one. Hence he thinks he may conclude againſt all who deny the Organs to have any concern in this affair, That a Fever is an Unnatural and Violent Tenſion of the Blood Veſſels, which cauſes a quick motion in the Heart and Arteries, and diſorders all the Animal Functions.



Now, ſince the Intumeſcence or ſwelling of the Blood is occaſioned by too Plentiful Nutrition, the Suppreſſion of ſome Evacuation, or the Mixture of ſome Impure Matter, which excites a Fermentation, and one of theſe muſt be the immediate cauſe of all Fevers whatever, conſequently laying aſide the ancient deſtribution of Fevers into Ephemeral, Putrid and Hectick, they are more rightly divided into Sanguinary and Humoral. The firſt are ſuch as ariſe from an exceſſive quantity of Blood, or ſome unuſual Fermentation of it. The latter are ſuch as proceed from ſome Impurities, or ſome Heterogeneous Mixture, exciting a violent Effervеſcence in the Vital Liquor.

Having thus explained the Nature of a Fever, its Cauſes and Kinds, it remains to compare the Symptoms and Method of Cure, which M. *Gavet* thinks admirably conduce to illuſtrate and confirm the Truth of his Syſtem.

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2. *D. Dominici Sanguineti Appuli Diſſertationes Iatrophyſicæ Neapoli 1699*

THe Theory of Medicine has been ſtrangely alter'd in the preſent Age, that it appears at firſt view a New Science. The Jargon of Hot, Cold, Moiſt, Dry, is become obſolete; inſtead of theſe, all the talk now is of Acid and Alkali; and from theſe Famous Principles the Modern Writers derive all Effects of Natural Bodies. But let theſe men take heed that they do not deceive themſelves with Empty and Inſignificant Names; as for our Author, he is perſwaded theſe Chymical Notions are Precarious, and no leſs unſatisfactory than the exploded Fictions of Firſt Qualities, Mixture, Temperament, *&c.*

Tho the Terms of Acid and Alkali may ſeem new, yet the Notions, or at leaſt ſomething not very unlike them, are to be met with in ſeveral Writers in different Ages. *Hippocrates*, *Galen* and others, aſcribe the Origin of many Diſeaſes to unnatural, ſowre and corroſive Juices in the Body, *&c.* But to come nearer to our purpoſe. *Hippocrates* in his Book *de Diæta* has this paſſage, *But Man, as all other Animals, is formed and conſiſts of two Principles of a contrary Nature, which yet agree and concur in their effect, Fire and Water. Theſe in Conjunction are ſufficient to give Being to all Things, tho neither is alone.* Theſe words *Tachenius* adapts to, and interprets of his Acid and Alkali, which he thinks ſufficient to account for the production of all Bodies, and the Appearances obſervable in them.

To illuſtrate this Reſemblance in a more particular manner, *Plato* in his *Timæus* deſcribes the Particles of Fire as Pyramidal, and Reaſoning of its Effects, ſays that by the Sharpneſs of its Angles, the Subtilty of its Sides, the Minuteneſs of their Parts, and Rapidity of Motion, they penetrate all Bodies break thro their Contexture, and deſtroy them. Agreeable to this Idea is the Deſcription of *Taſſo*,

Genera du ſigure in varii aſpetti
Di Piramidi acute il ſottel fuoco.

How little does this differ from the Account given by the Moderns of Inſenſible Parts of their Acid, who unanimouſly affirm them to be exceeding minute, ſharp and pointed. Again, as Water, after the Theory of *Hippocrates*, is a Paſſive Principle, which ſerves to take off the Edge of the Fire, and make a Temperate Body in Combination with it; ſo Alkali is repreſented as a Porous Matter, fit to receive and ſheath the ſharp Points of an Acid, and concur with them in forming a *Compoſitum*, which does not ſenſibly partake of the Extreme Qualities of either.

But ſetting this aſide, whither Ancient or New, or any other uſe made of theſe Principles, *S. Sanguineti* conſiders them no farther than as they concern Animal Bodies. *Helmont* thinks no Acid can be lodg'd naturally in any part of the Body except the Stomach, and there it is neceſſary, and the chief Efficient in Digeſtion, and the Alteration which the Aliment receives; but if it ſhall extend farther it becomes unnatural, infects the Sweet and Balſamick Juices, and is the Cauſe of moſt Diſeaſes incident to Animal Bodies.

Whether Digeſtion and Chylification be effected by the help of an Acid in the Stomach may be very much queſtioned. The Ancients aſcribe this to their *Calidum innatum*: *Sylvius* to a Mixture of the *Saliva* and the Remains of the former Meat, aſſiſted by a Warmth convey'd from the Arteries of that and the neighbouring parts. But *S. Sanguineti* thinks none of theſe ſo proper as a certain Saline

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Armoniacal Liquor, ſeparated by the inner and Glandulous Coat. But to return to the ſubject; the Notion of Acidity has ſo far prevailed, that all Diſeaſes, as well Acute as Chronical, Fevers, Cachexies, Dropſies, Green-ſickneſs, Suppreſſion of the *Menſtrua*, Venereal Maladies, Rheumatiſms, Colicks, Pleuriſies, Apoplexies, Epilepſies, and what not, are all derived from this Univerſal Source.

This Opinion is too haſtily advanced, and without due conſideration. To give one inſtance, inſtead of many more, of its Deficiency; it may ſometimes happen that Diſeaſes may ariſe from the Quantity or Quality of our Edibles, which may be ſo cloſe and ſolid, that the Acid cannot penetrate or reduce them, or may be devoured ſo largely by Gluttons and Great Eaters as to overpower and oppreſs it.

After many other Reaſons, which our Author alledges againſt the vulgar Hypotheſis of Acid and Alkali, he enters into a Diſquiſition concerning Fermentation in Animals, and whither ſuch an Inteſtine Motion be conſiſtent with the Circulation of the Blood, and whether the latter alone be not ſufficient for the preparation and ſecretion of all the Animal Liquors, without the former.

Tho the Blood be a Diſſimular Fluid, and conſequently muſt have a great Aptitude to ferment when it ſtagnates, yet the Rapidity of its Circular Courſe muſt prevent this, ſo long as it continues in the Veſſels of Living Creatures. The Spirits which flow from the Brain by the Nerves cauſe a quick Contraction of the Spiral Fibres of the Heart, and project the Blood with great Swiftneſs and Impetuoſity thro the Arterial Canals to all Parts of the Body, ſo as to overcome the Reſiſtance of the Fluid, and therefore all the Liquors in the Veſſels muſt receive an Impulſe and Direction from it, and can have no Motion of their own contrary to it.

As for the Chylification, and the Converſion again of Chyle into Blood, for which ſome ſuppoſe Fermentation to to be a neceſſary Inſtrument, it ſhould then be the work of ſome days, and perhaps months, according to the ſlow ſteps by which Vegetable Juices are brought to Perfection and Maturity; whereas, on the contrary, this work is compleated in a few hours, and the Aliment turn'd into Chyle, Blood, Spirits. It is more reaſonable to aſcribe this Change to the conſtant Impulſe the Fluids do receive; nor can it ſeem ſtrange, if we conſider that the Heart beats four thouſand times every hour, and the Component Parts of the Blood are ſo often ſhaken and beaten together, which is more than ſufficient to excite any Motion, without calling Fermentation to its Aid.

S. Sanguineti does not think it beſide his purpoſe, to enquire into the Nature of Fermentation in general, and in inanimate Things in particular. Tho the Juices of Vegetables have beyond all controverſie an Ebullition and Fermentative Motion, yet it may be doubted whither this proceed from any Acid or Alkali, or other Inteſtine Principles. *Borelli* aſcribes it to the Gravity of the Air, and this ſeems to have a good Ground and Foundation. It muſt be put into a proper Veſſel, cloſely ſtopt, and put under Water it will keep for a year: For by the Chillneſs of the Water, and the hindring the Ingreſs of New Air, that which before lay concealed in its Pores loſes its Elaſticity, and cannot excite a Commotion. In like manner, Fruits, Flowers, Fleſh and Fiſh, are preſerved without Decay for a conſiderable time; which Experiments, with many more to the ſame purpoſe, made and publiſhed by the late Honourable Mr *Boyle*, are too vulgarly known to be inſiſted on here. From all which it is undeniably plain, the Inſenſible Parts of all Bodies are agitated by the Air.

Beſides, if Fermentation does only ariſe from the Heterogeneity of Mixt Bodies, he inquires why ſhall after percolation, ſtir very little, or not at all? Why Wines diligently kept from the Air ſhall laſt ſo long: Why Oyl, which is a Vegetable Juice, ſhall either not ferment at all, or in ſuch a manner as is ſcarce perceivable.

In his laſt Diſſertation *S. Sanguineti* reſumes the Matter of Chylification. He thinks the Stomach has moſt of its Ferment diſcharg'd into it when its Membranes are diſtended by the Food contained in them, becauſe the numerous ſmall Arteries ſuffer moſt Compreſſion at that time, and the Circulation of the Blood thro them is moſt retarded; and ſince the whole Maſs, according to the Laws of Circulation, muſt in a little time paſs thro the Stomach, there is no wonder Concoction ſhould be ſo ſoon finiſhed.

It ſeems plain, the Aliment contained in the Stomach is attenuated by the Mixture of Ferments, and the Motion of its Membranes, and by the Contraction and Preſſure of its Fibres is protruded forwards, and when the Chylous Juice is perfected by the Weight of the Stomach and Superiour Viſcera, and by the Force of the Liver, conſpiring with the Alternate Motion and Compreſſion of the Diaphragm, it is as it were by a Preſs ſqueezed into the Guts.

Before he concludes, our Author returns to his firſt Head, and declares Acid and Alkali do not deſerve the Name of Principles, ſince they ariſe from the Diſſolution or Conjunction of Bodies, and therefore are no more Elementary or Simple, than the other Chymical Principles, as Mr *Boyle* has largely prov'd in his *Sceptical Chymiſt*.

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